11-1-2013

Clouds, Crowds, and Traffic: What 10 Emerging Megatrends Mean for the Future of Transportation

Ted Trepanier
INRIX, Inc.

Clouds, Crowds & Traffic

Ten Emerging Megatrends Impacting the Future of Transportation

Ted Trepanier

INRIX

INRIX Powers the World's Largest Traffic Intelligence Network

INRIX


TEN
MEGATRENDS
Reshaping Mobility

GROWTH OF URBANIZATION

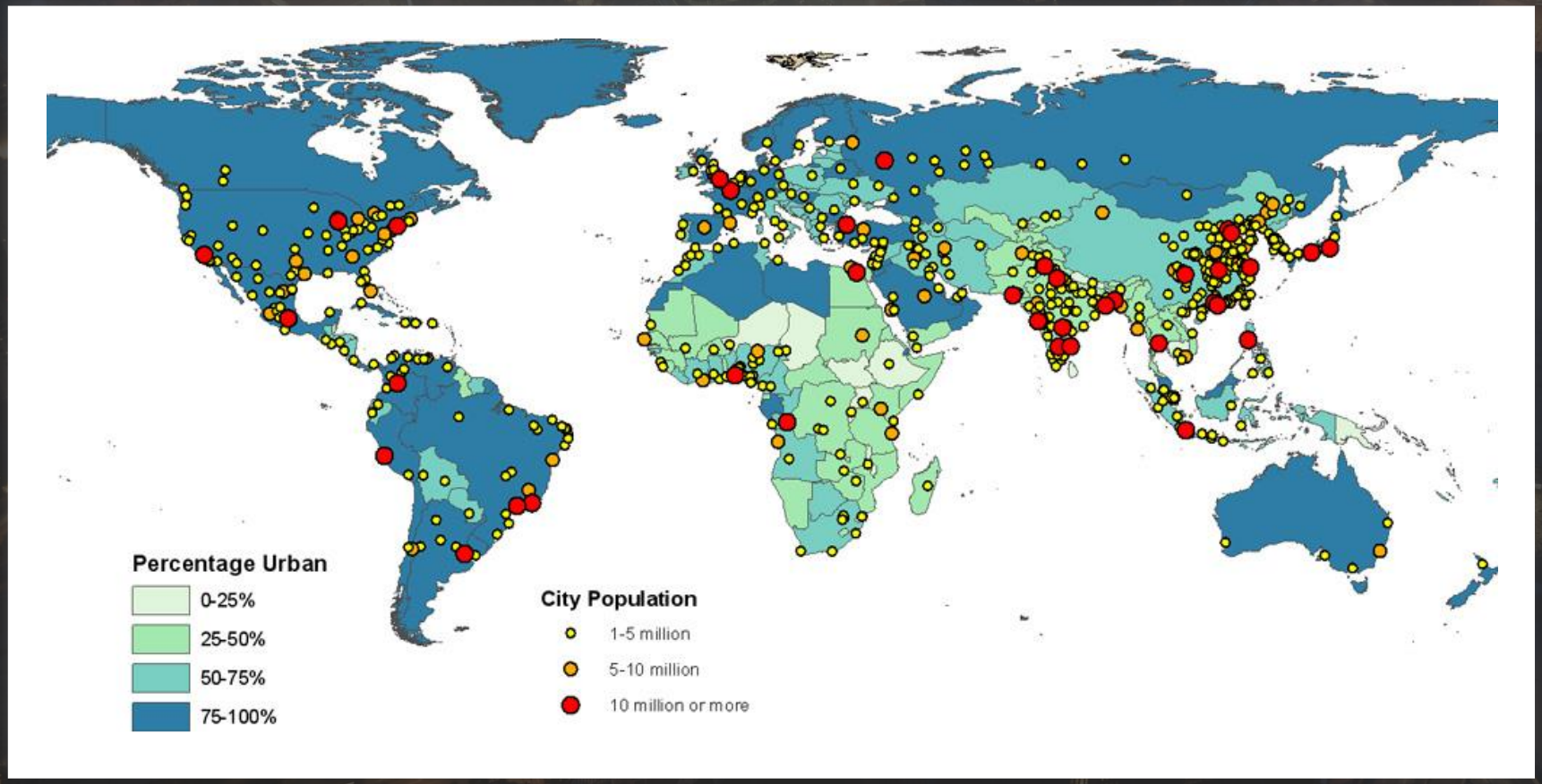
Population of urban areas

UN Department of Economics & Social Affairs (ESA), 2011

INRIX

GROWTH OF URBANIZATION

1980 2011 2025

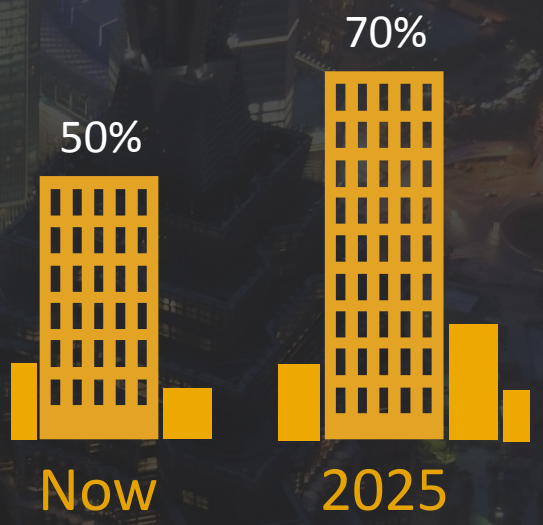


UN Department of Economics & Social Affairs (ESA), 2011

INRIX

GROWTH OF URBANIZATION

Percentage of Chinese residents living in urban centers



China National Development and Reform Commission (NDRC), 2013

INRIX

COST OF CONGESTION

Annual hours wasted per driver

Los Angeles Stuttgart Paris

INRIX Scorecard、2012

COST OF CONGESTION

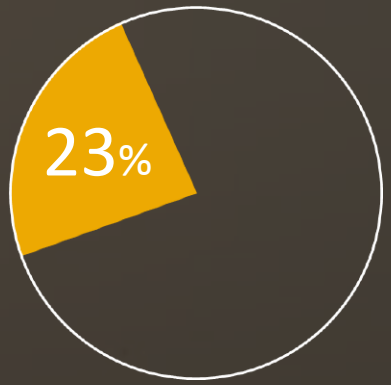
Economic impact in billions

$121	€7.8	€5.6
United States	Germany	France

TTI; Centre for Economics and Business Research, 2012

POLLUTION

% of carbon emissions from vehicles

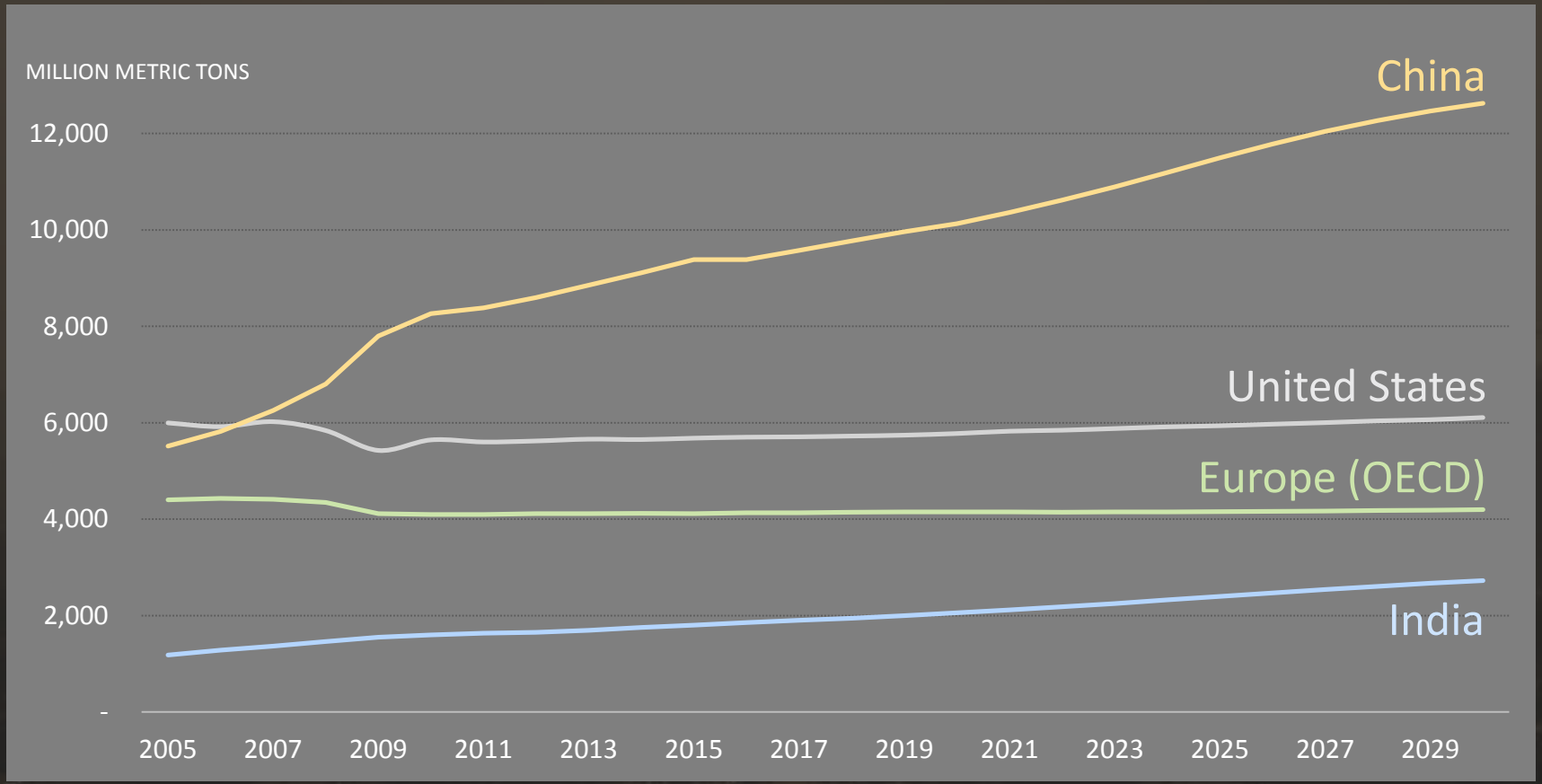


INRIX

OECD, 2011

POLLUTION

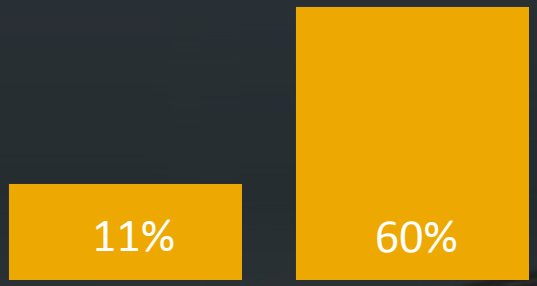
World CO_2 emissions



U.S. EIA, 2011

INRIX

CONNECTED CARS



INRIX

ABI Research (ABI), 2012

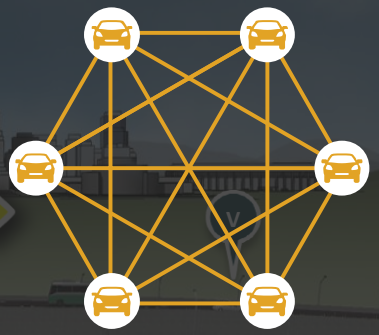
URBAN MOBILITY

Rise of on-demand transportation

INRIX

THE "CROWD"

1.3 billion drivers by 2017



Flow

- Road sensor
- Traffic camera
- Commercial Vehicle GPS Probe
- Consumer Vehicle GPS Probe
- GPS-Enabled Smartphone Probe
- Cellular Network Probe

Incidents

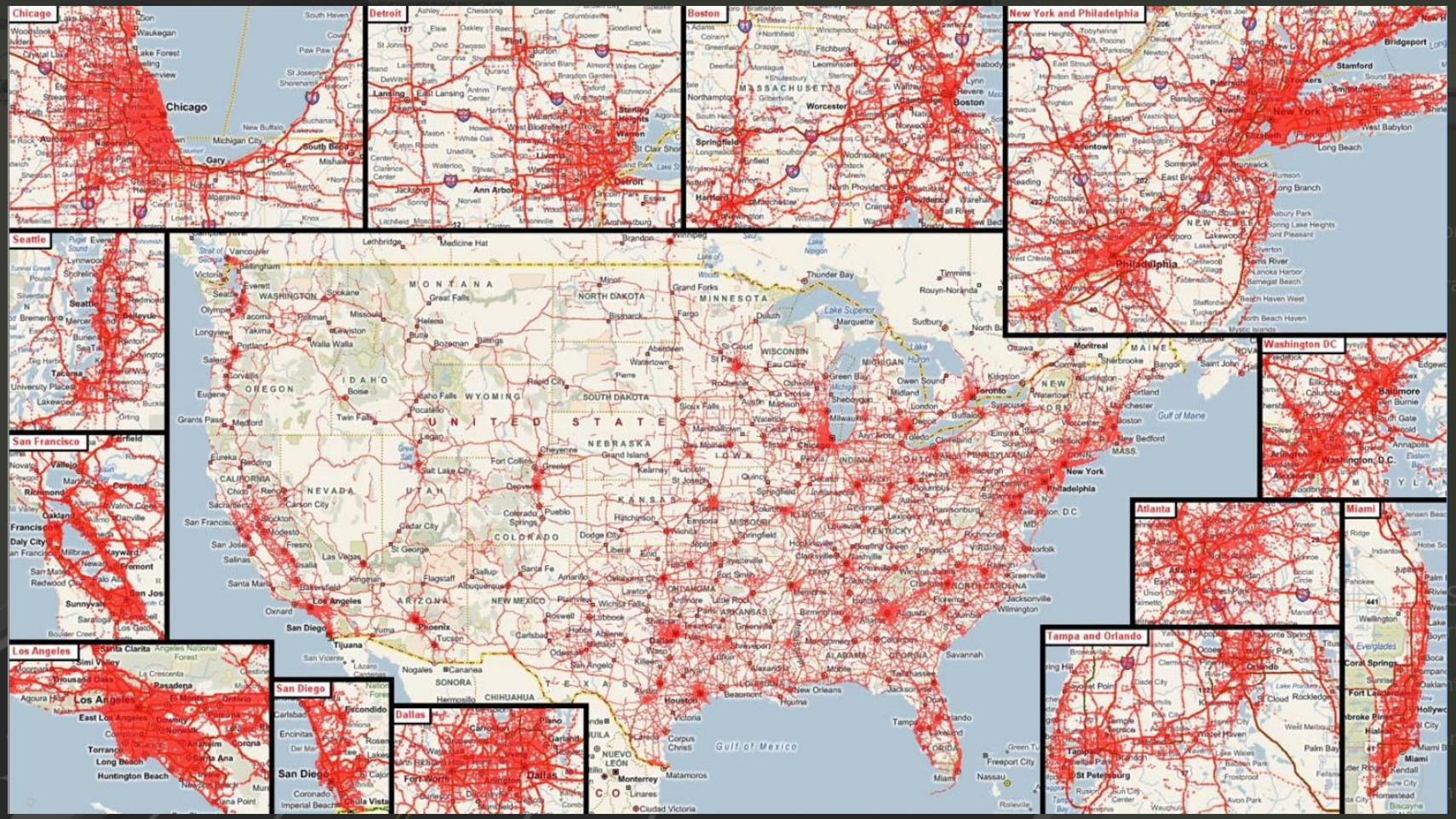
- Driver Generated Report
- Accident
- Construction
- Event

INRIX

Scotia Bank, 2011

INRIX Traffic Intelligence Network

North America, Spring 2010

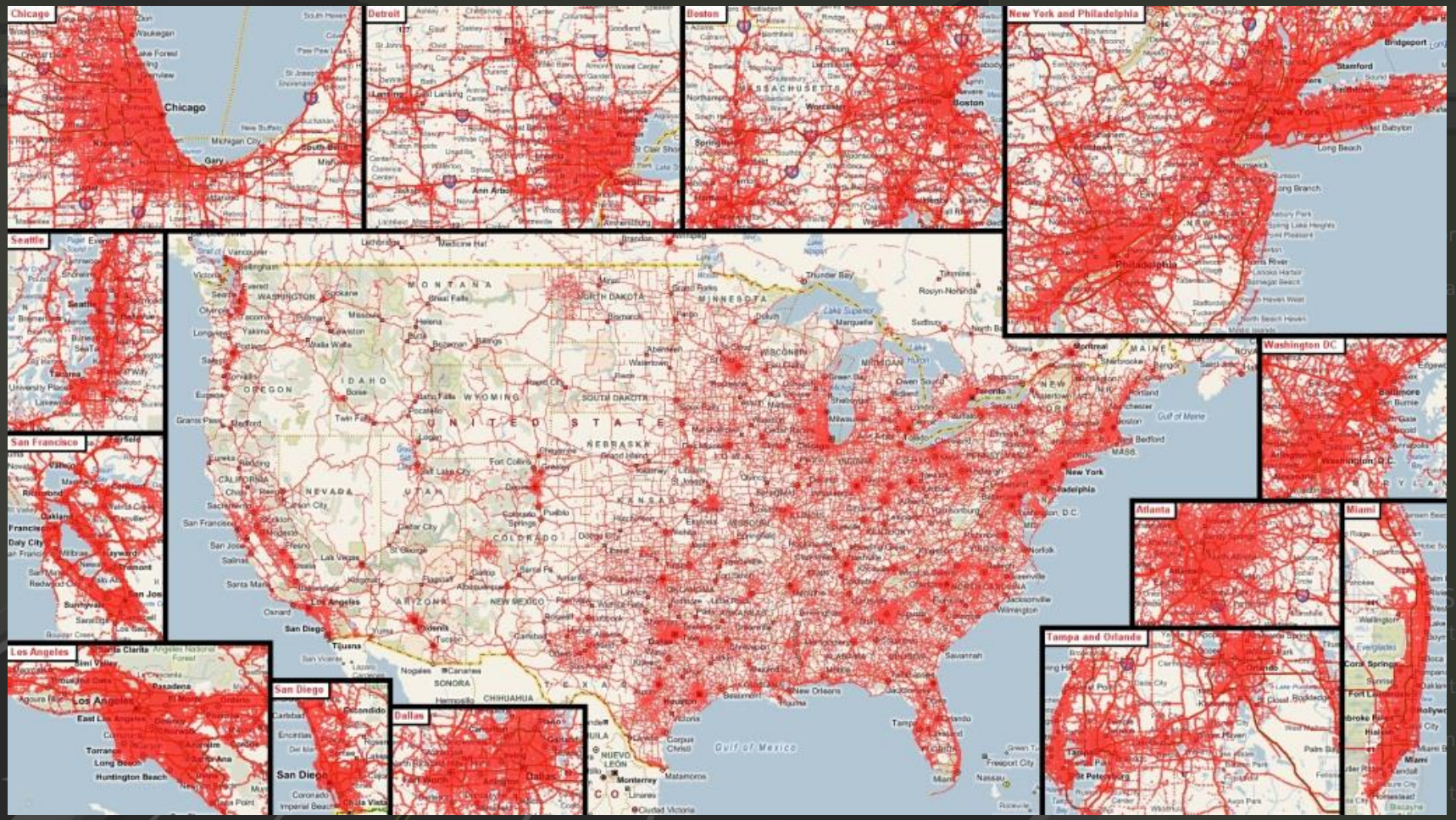


Examples of 15-Minute Real-Time Snapshots

INRIX

INRIX Traffic Intelligence Network

North America, Spring 2013

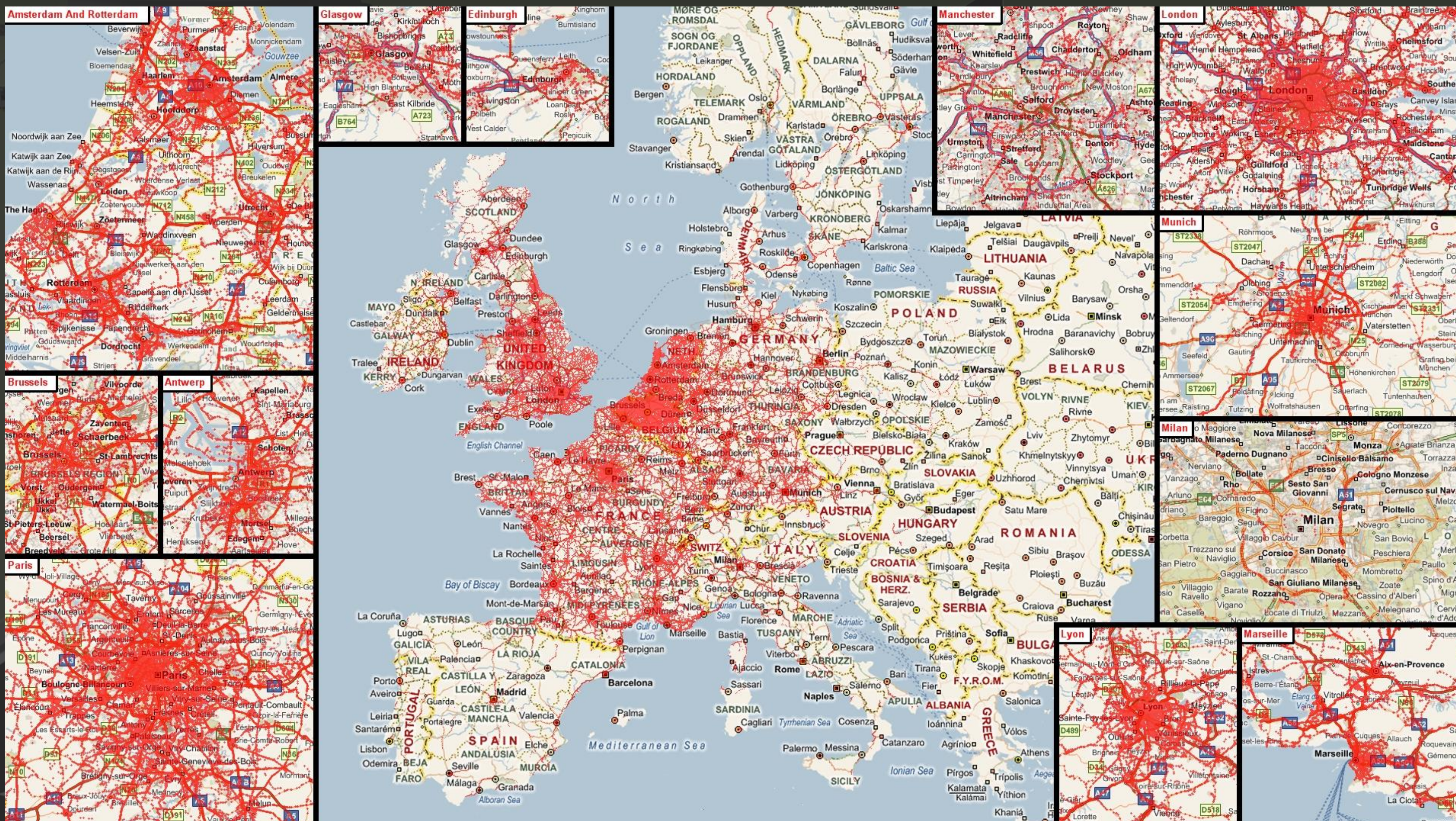


Examples of 15-Minute Real-Time Snapshots

INRIX

INRIX Traffic Intelligence Network

Europe, Fall 2010

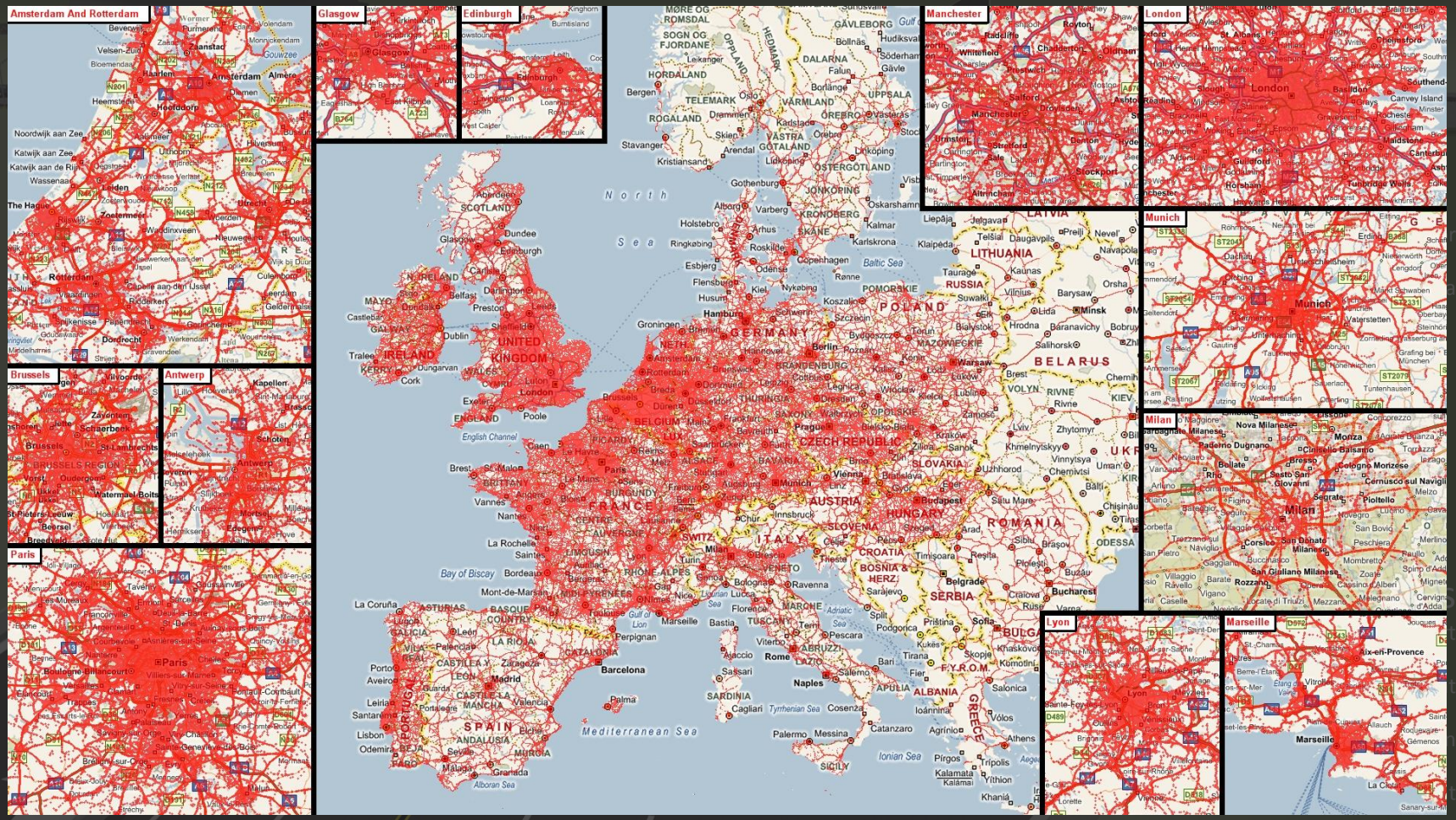


Examples of 15-Minute Real-Time Snapshots

INRIX

INRIX Traffic Intelligence Network

Europe, Spring 2013



Examples of 15-Minute Real-Time Snapshots

INRIX

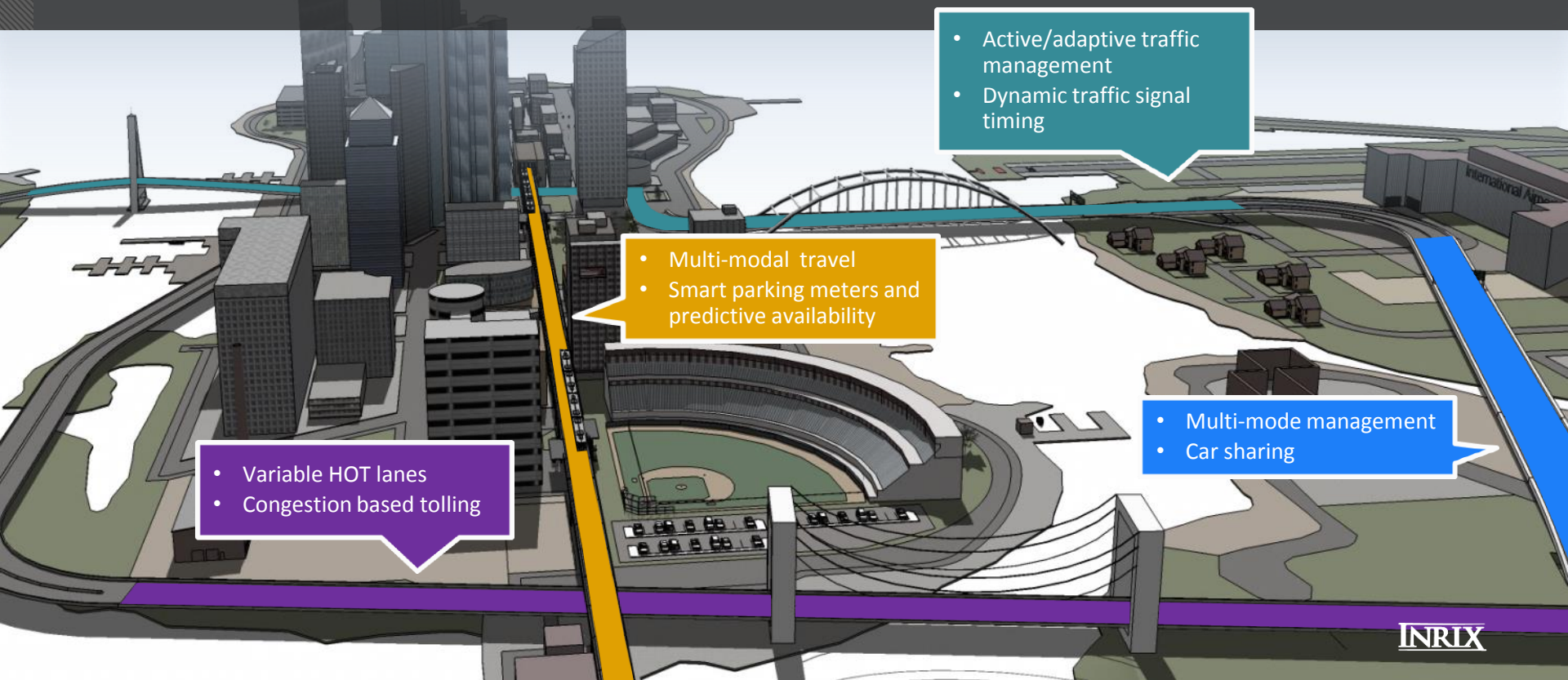
ACTIVE ROAD NETWORK MANAGEMENT

Real-time data and analytics for millions of miles

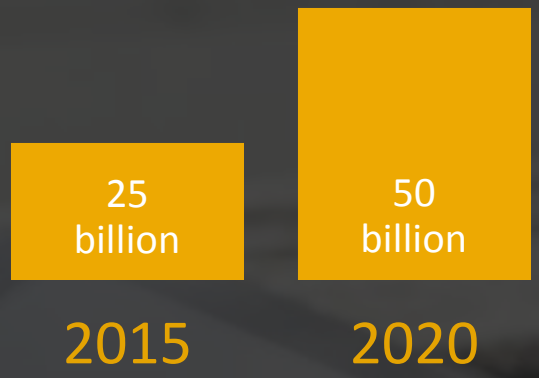
FUTURE OF TRANSPORTATION

Big Data and ITS technologies will drive improved urban mobility

- Integrated corridor management
- Network-wide analysis
- System performance monitoring



CONNECTED DEVICES

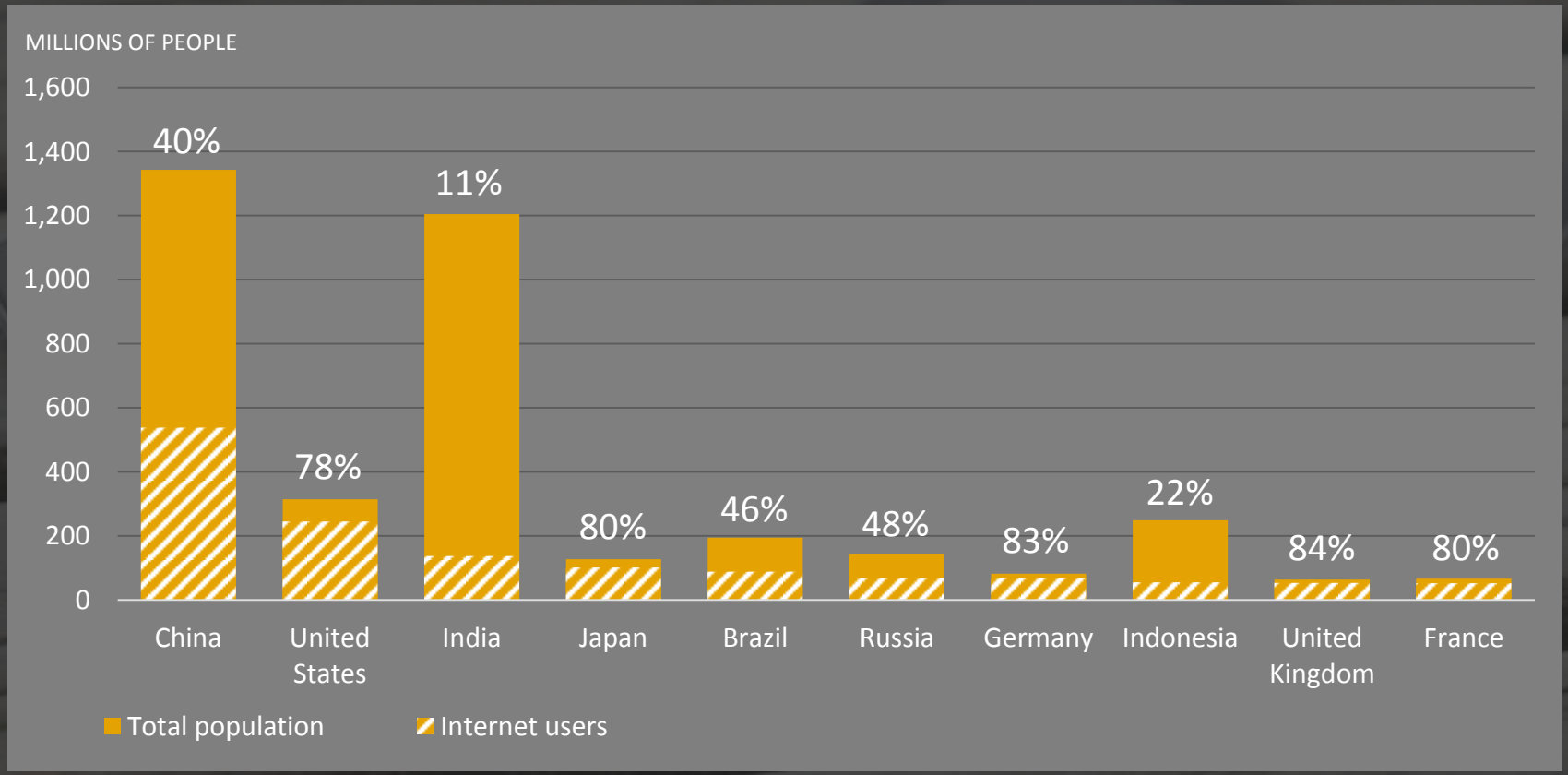


Cisco IBSG, 2011

INRIX

CONNECTED DEVICES

Penetration of Internet usage by country

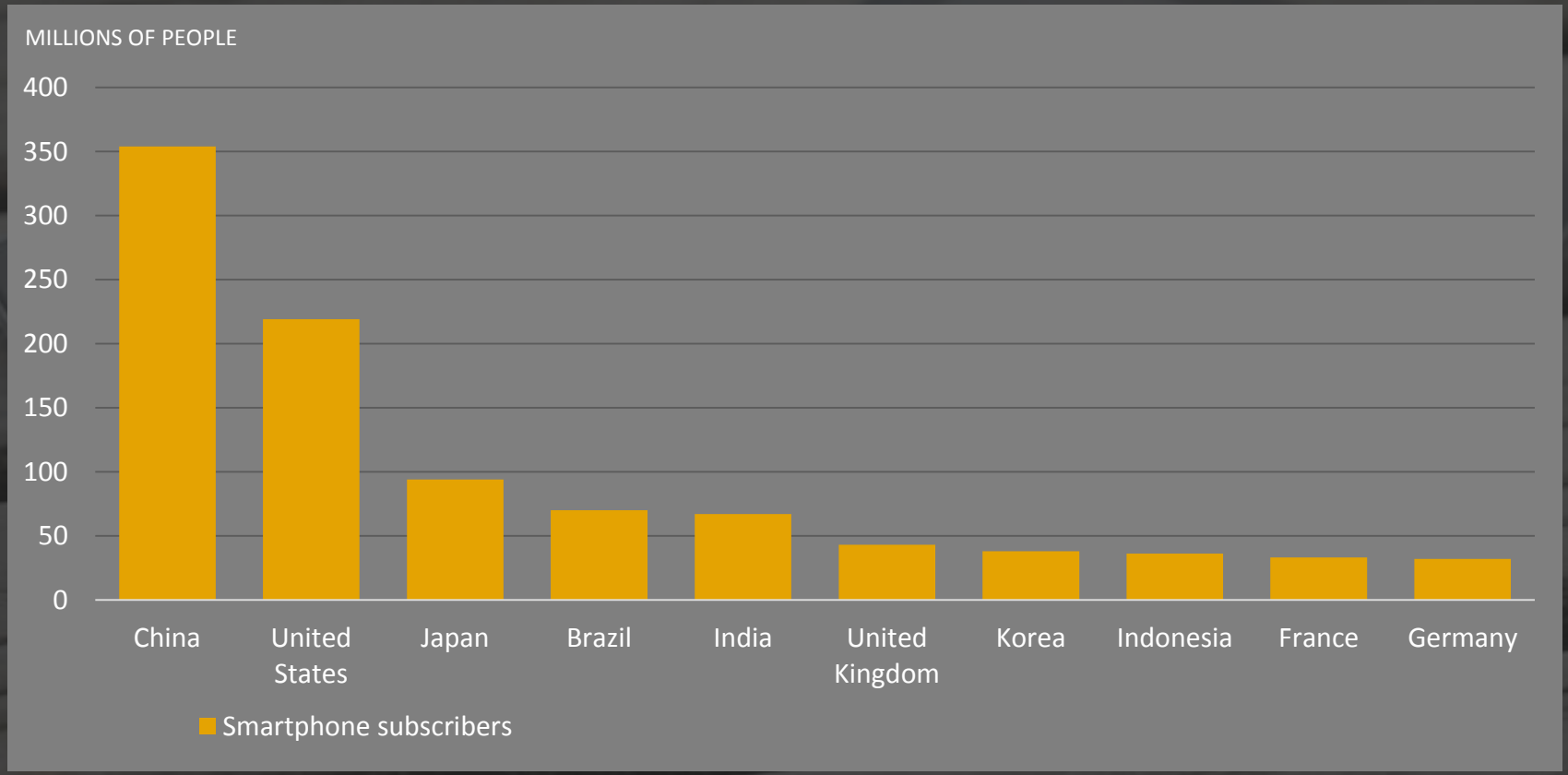


Internetworldstats.com 6/30/2012

INRIX

CONNECTED DEVICES

1.5 billion smartphones globally



INRIX

Informa, 2013

PERSONALIZATION

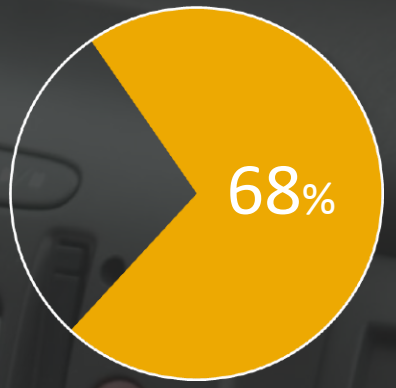
Navigating your world

INRIX Concept, 2013


How long will it take to get to home or work?
Where can I charge my electric vehicle?
Where is the closest available parking?
How efficiently do I drive compared to others in my city?
Would it be quicker to park and take the train?
Where is the cheapest fuel along my route?
What's the best way to avoid this traffic?
Is the roadway starting to ice up?

IN-CAR INFOTAINMENT

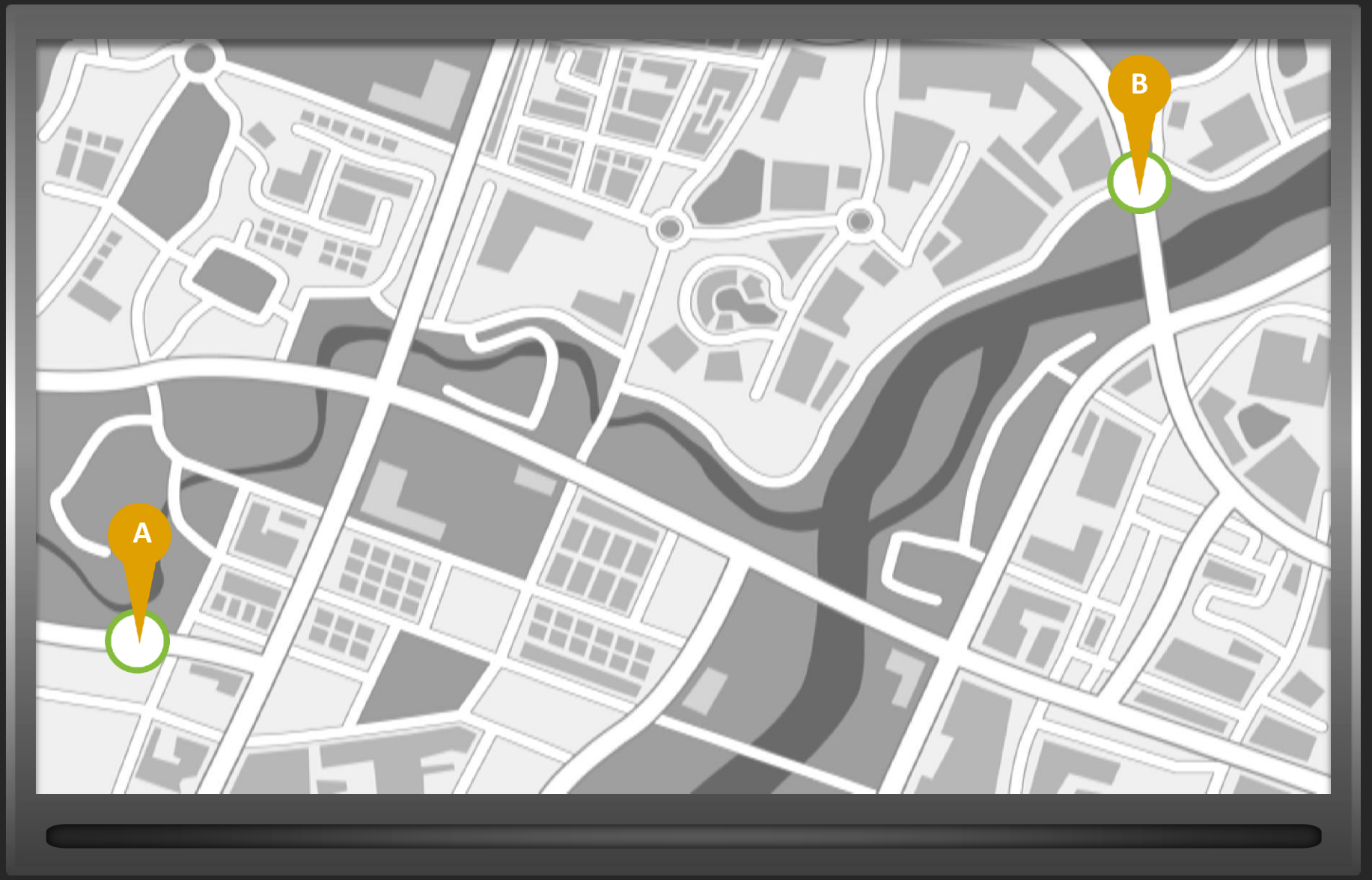
Adoption by 2019



Strategy Analytics、2012

INRIX

THE CONNECTED CAR

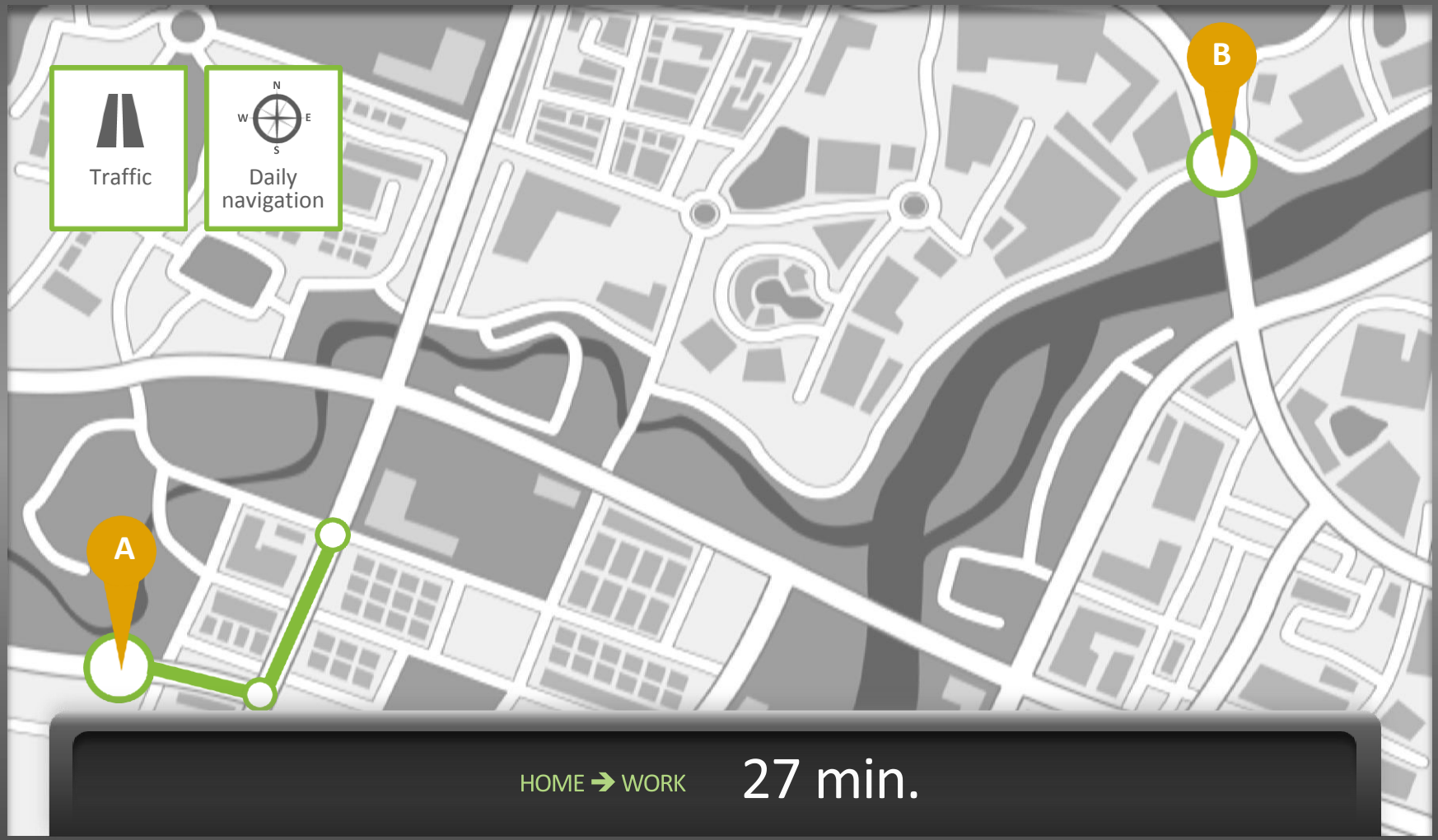


INRIX

TRAFFIC

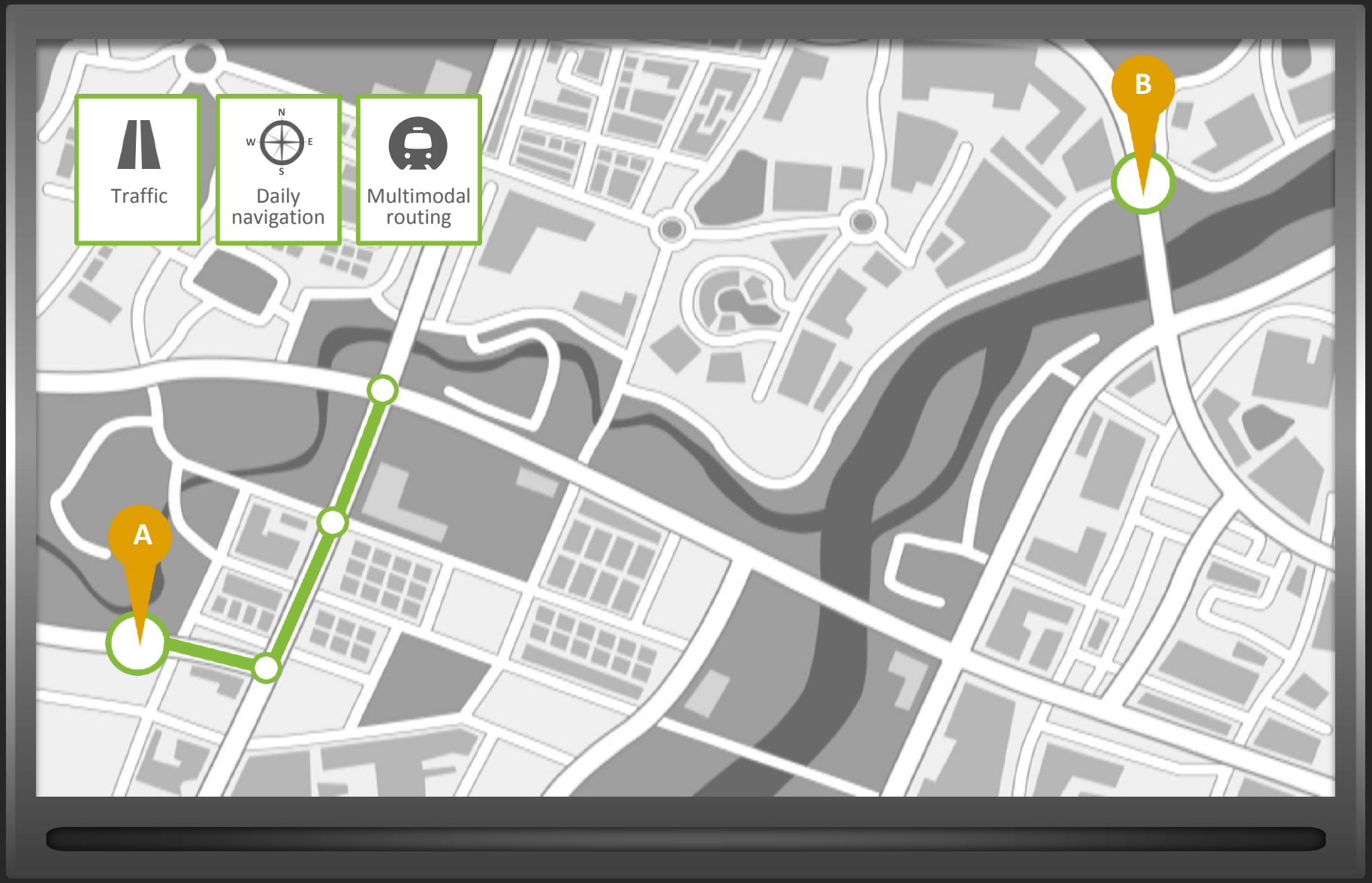
INRIX

DAILY NAVIGATION



INRIX

MULTIMODAL ROUTING

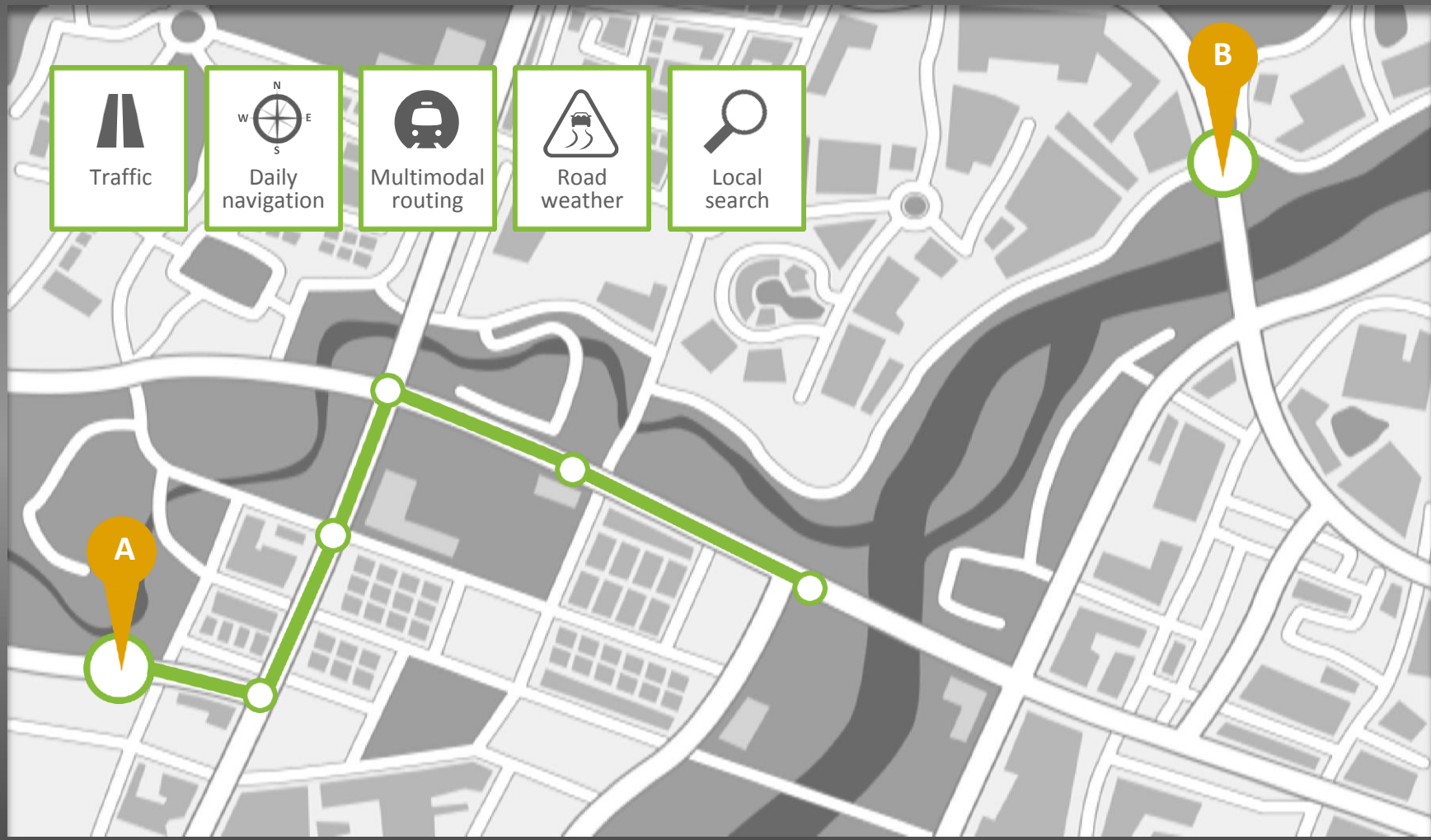


INRIX

ROAD WEATHER

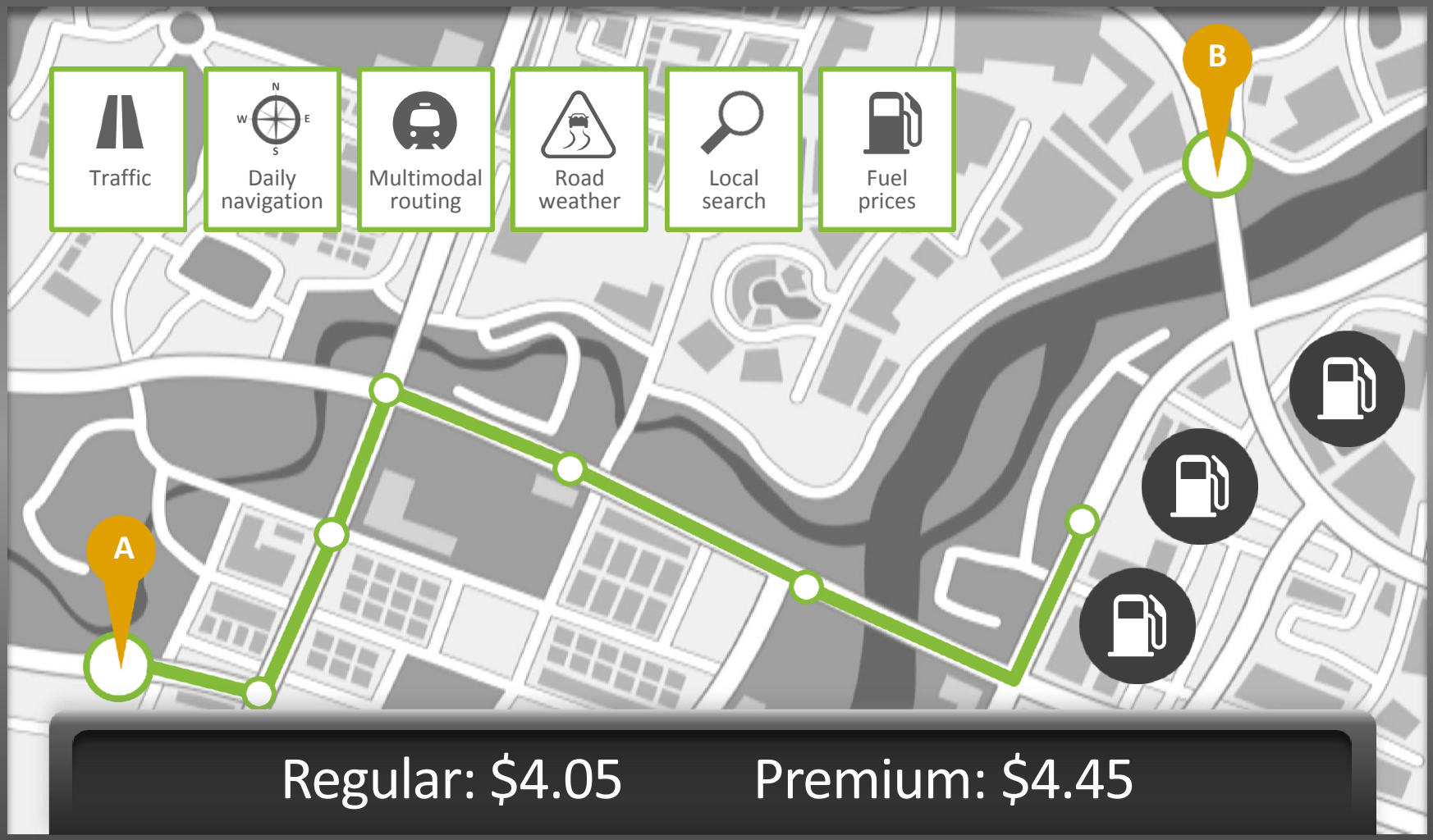
INRIX

LOCAL SEARCH



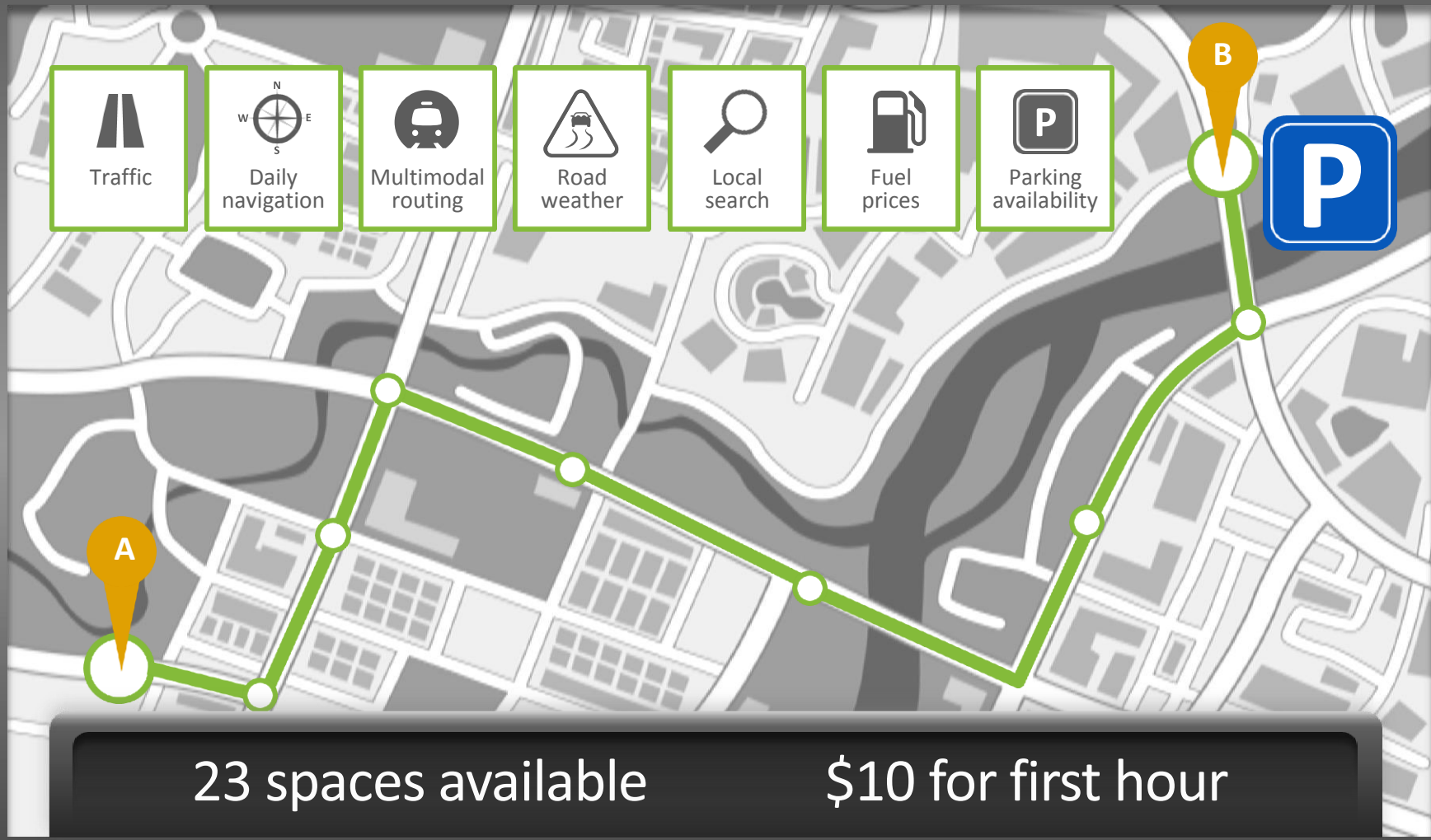
INRIX

FUEL PRICES



INRIX

PARKING AVAILABILITY



INRIX

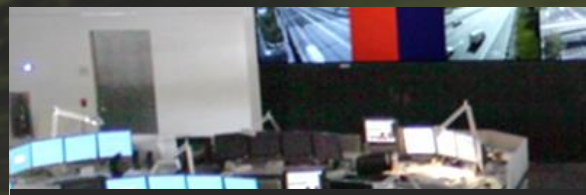
DRIVING FORWARD

Ten Megatrends

Growth of Urbanization

The “Crowd”

Cost of Congestion



Active Road Network

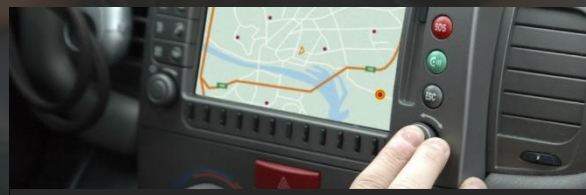
Pollution

Connected Devices

Connected Cars

Personalization

Urban Mobility



In-car Infotainment

AUTONOMOUS DRIVING

"We should be able to do 90% of miles driven within 3 years."
– Elon Musk, Tesla

Image: Continental Automotive, 2013

INRIX

Twisted Trends

- Woman in the Workforce
- The Baby Boom
- Household Income
- Suburbanization
- Automobile Ownership
- Congestion
- Generational Preferences

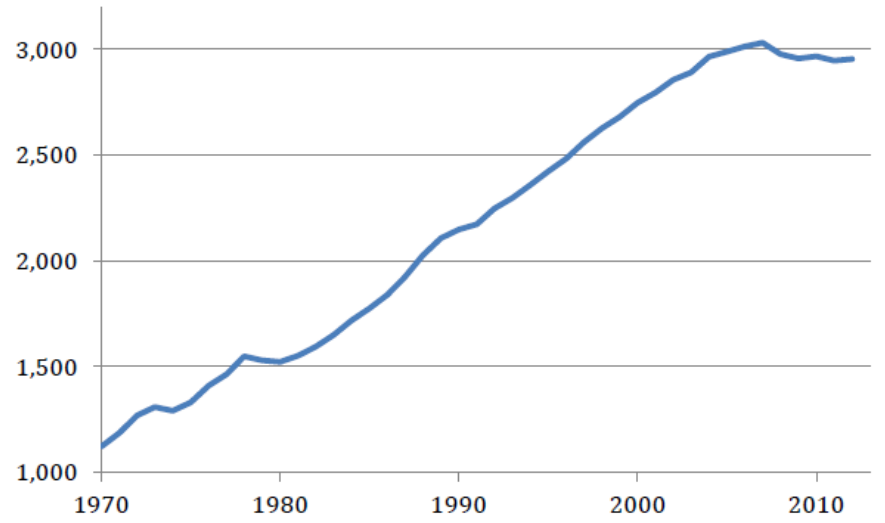


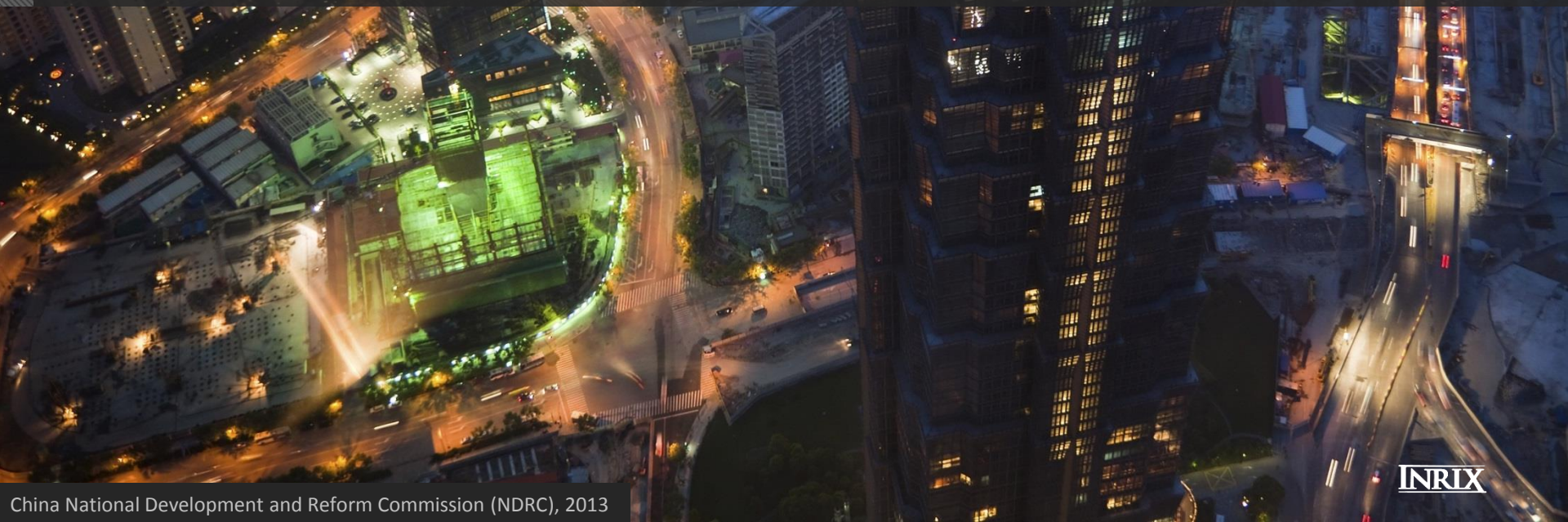
Figure 1. Total annual VMT in the United States (in billions). Source: FHWA.

U.S. EIA, 2011

INRIX

The “Planners Challenge”

It is well understood –
We cannot build ourselves out of congestion.



China National Development and Reform Commission (NDRC), 2013

INRIX

The “Planners Challenge”

It’s also been long assumed that VMT will continue to grow.

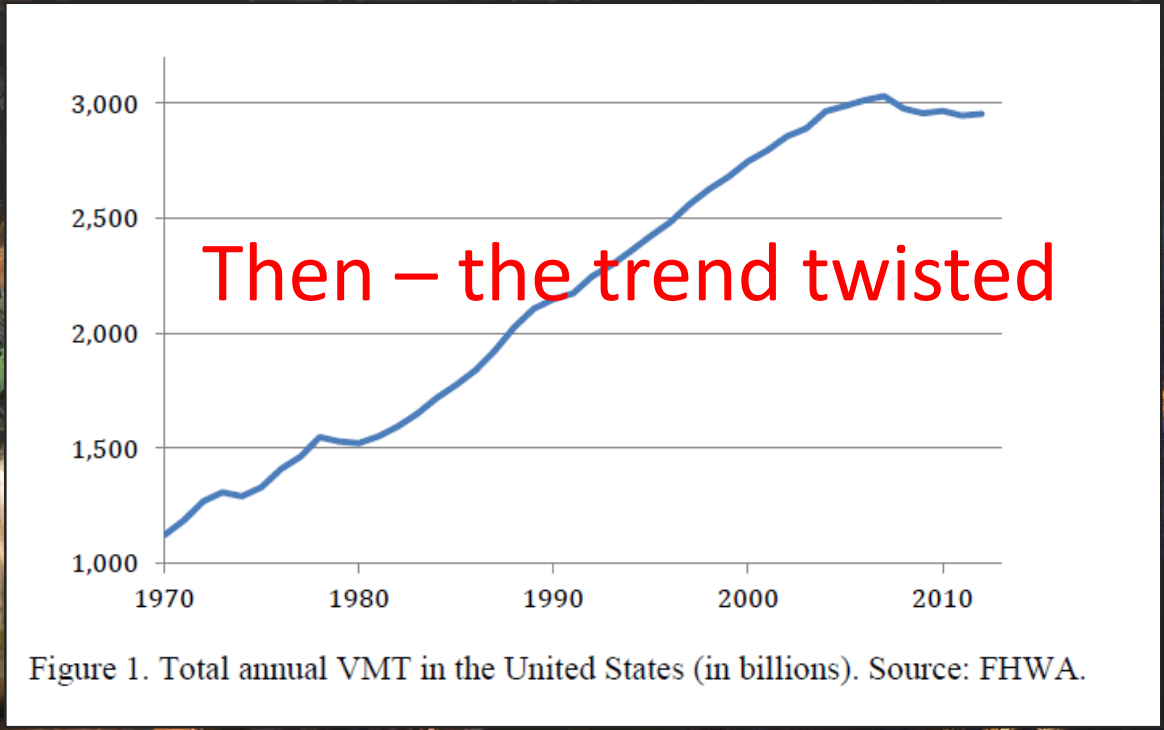


Figure 1. Total annual VMT in the United States (in billions). Source: FHWA.

China National Development and Reform Commission (NDRC), 2013

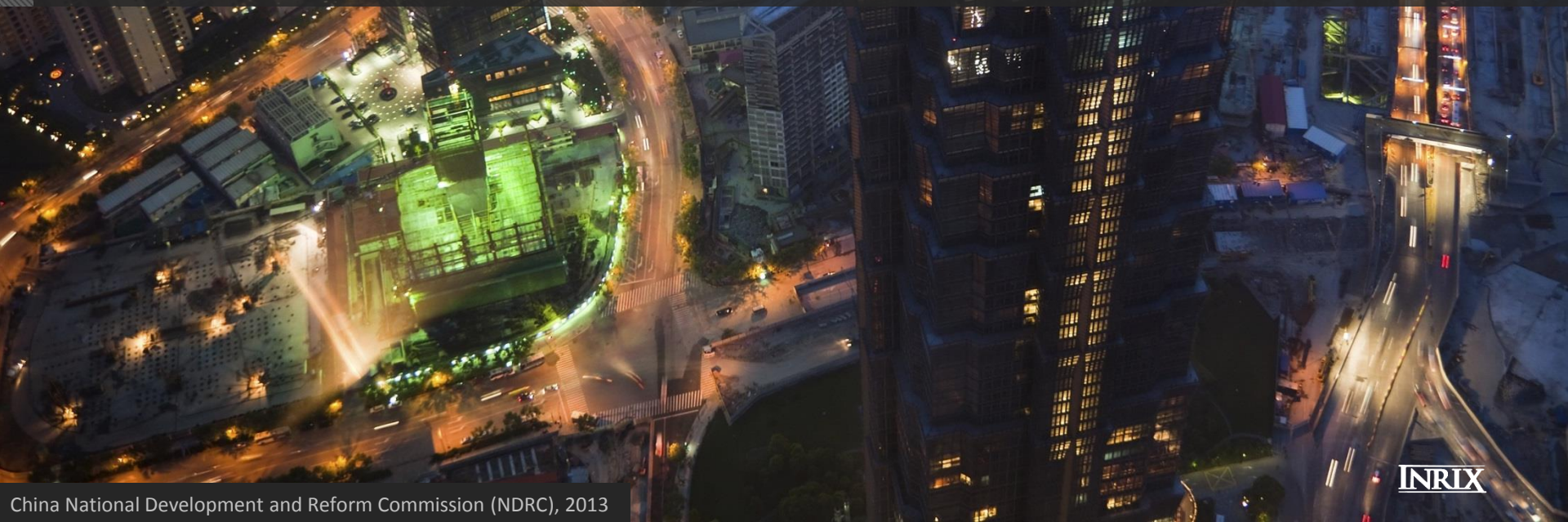
INRIX

The “Planners Challenge”

It is well understood – Maximum Freeway Capacity is near 2000 vphpl

Smart Cars will increase this to???

3000 3500 4000 More…



China National Development and Reform Commission (NDRC), 2013

INRIX

The “Planners Challenge”

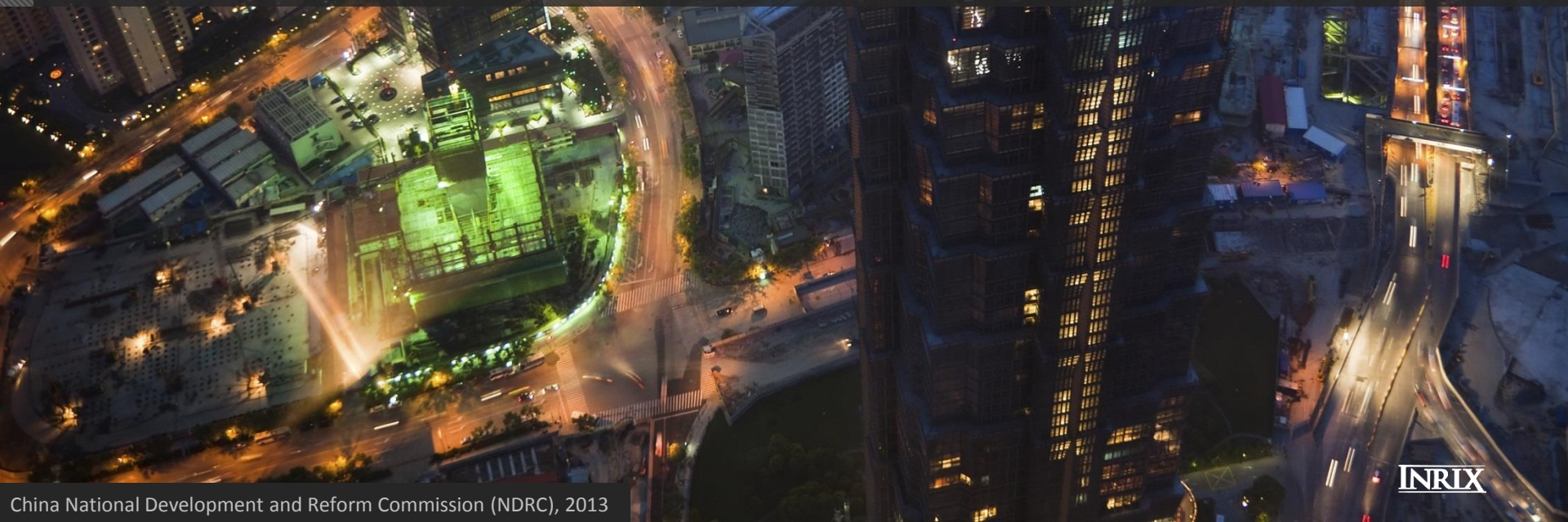
Consider – decreasing demand – added capacity

China National Development and Reform Commission (NDRC), 2013

INRIX

The “Planners Challenge”

What does this mean to the assumption?
“We cannot build ourselves out of congestion”

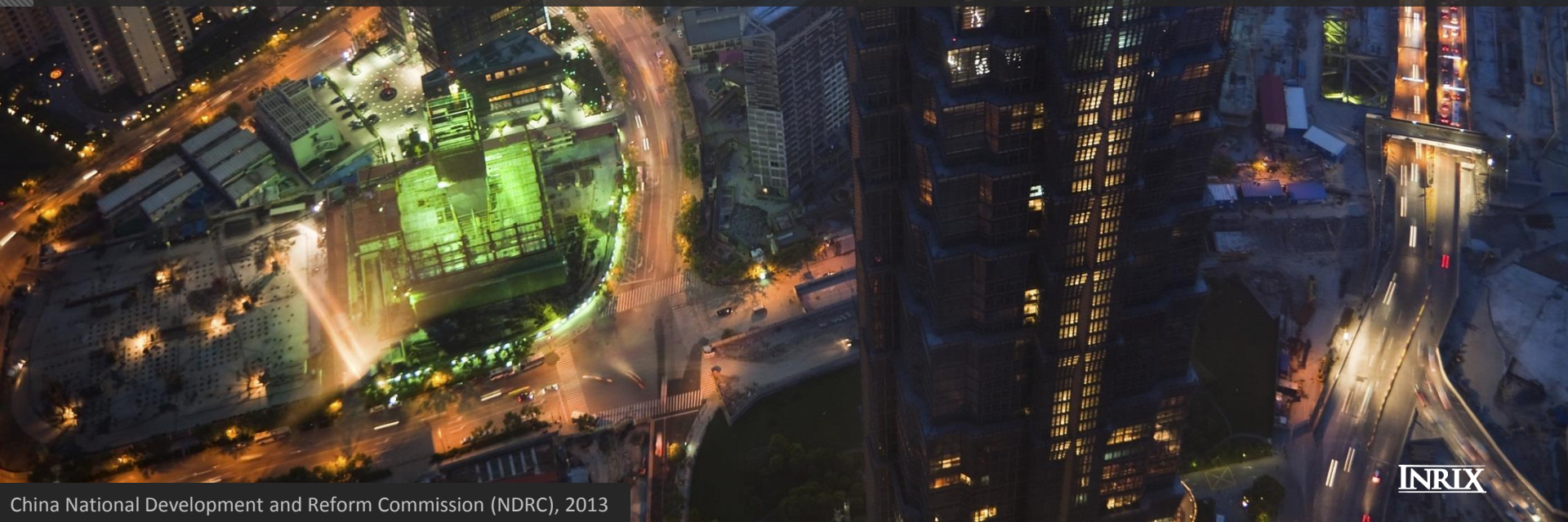


China National Development and Reform Commission (NDRC), 2013

INRIX

The “Planners Challenge”

Instead of planning for the
Next Transportation Package…



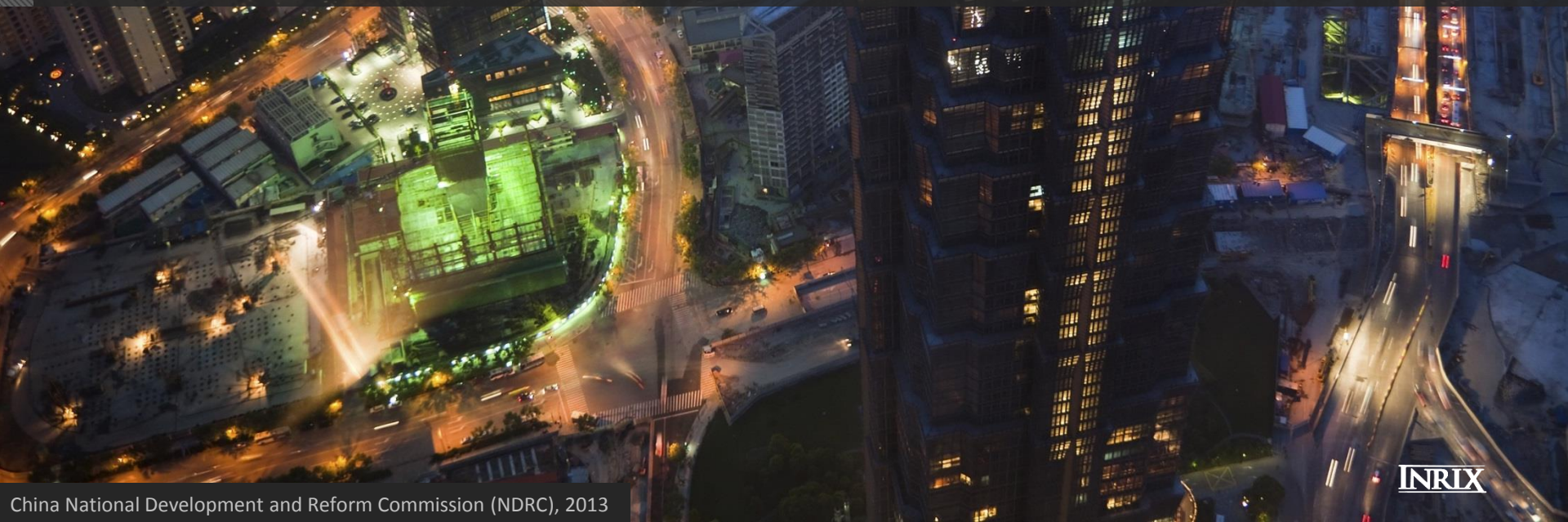
China National Development and Reform Commission (NDRC), 2013

INRIX

The “Planners Challenge”

Let’s think about planning for -

The Last Transportation Package



China National Development and Reform Commission (NDRC), 2013

INRIX

Multnomah County Bottlenecks

INRIX Traffic - US

Welcome, ted@inrix.com | My Account | Logout | Contact Us

Home Traffic Score Card Analytics Help

INRIX Analytic Tools | Bottleneck Ranking

Welcome, ted@inrix.com | FAQs | Screencasts | Logout

Bottleneck Ranking

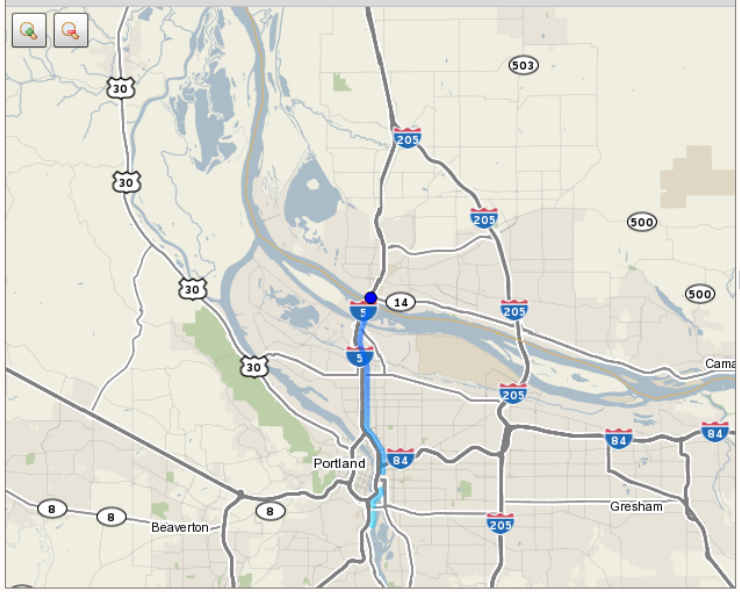
New search

Bottleneck locations on Oregon Interstates (in Multnomah County) between July 1, 2013 and September 30, 2013 (168 total)

Export to CSV

Location	Average duration	Average max length (miles)	Occurrences	Impact factor
I-5 N @ WA-14/EXIT 1	4 h 32 m	13.67	150	557,612
I-5 S @ BUTTEVILLE RD/MILEY RD/EXIT 282	4 h 23 m	18.66	53	260,100
I-205 N @ 83RD ST/EXIT 32	2 h 36 m	8.95	182	254,065
I-5 S @ TERWILLIGER BLVD/EXIT 297	2 h 38 m	6.60	194	202,232
I-84 E @ 102ND AVE/EXIT 9	3 h 34 m	5.45	136	158,752
I-5 N @ WA-14/EXIT 1	2 h 6 m	6.41	153	123,611
I-84 W @ I-5	2 h 10 m	3.91	199	101,255
I-84 E @ I-205/EXIT 8	2 h 18 m	4.36	105	63,180
I-205 S @ JOHNSON CREEK BLVD/EXIT 16	2 h 9 m	6.19	68	54,320

I-5 N @ WA-14/EXIT 1

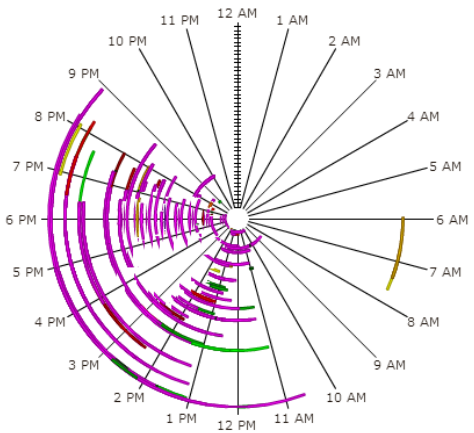


Occurrences

Spiral | Table | Export to CSV

In this time spiral each trip around the circle represents a day

The center represent July 1, 2013 and the outer edge represents October 1, 2013.



Maximum queue length < 1 > 10 miles

INRIX


Thank You
Ted Trepanier
ted@inrix.com
www.inrix.com
INRIX